Express Mail Label EV 316 331 710 US
Inventor: John Fitzgerald, et al.
Filed: October 9, 2003
Title: MATERIALS, EQUIPMENT AND METHODS FOR MANUFACTURING CIGARETTES
Atty: J. Michael Boggs Phone # 336-747-7536

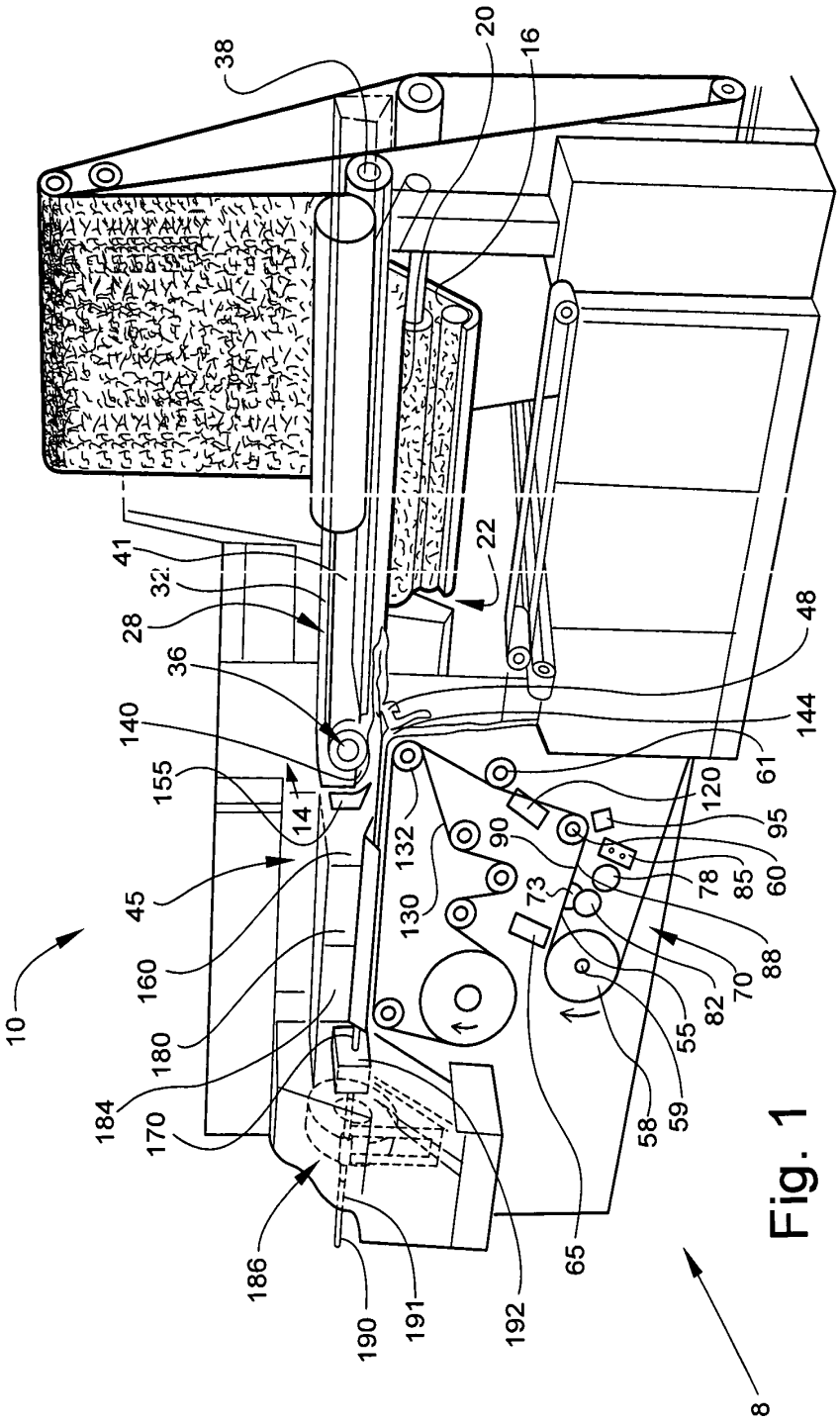

Fig. 1

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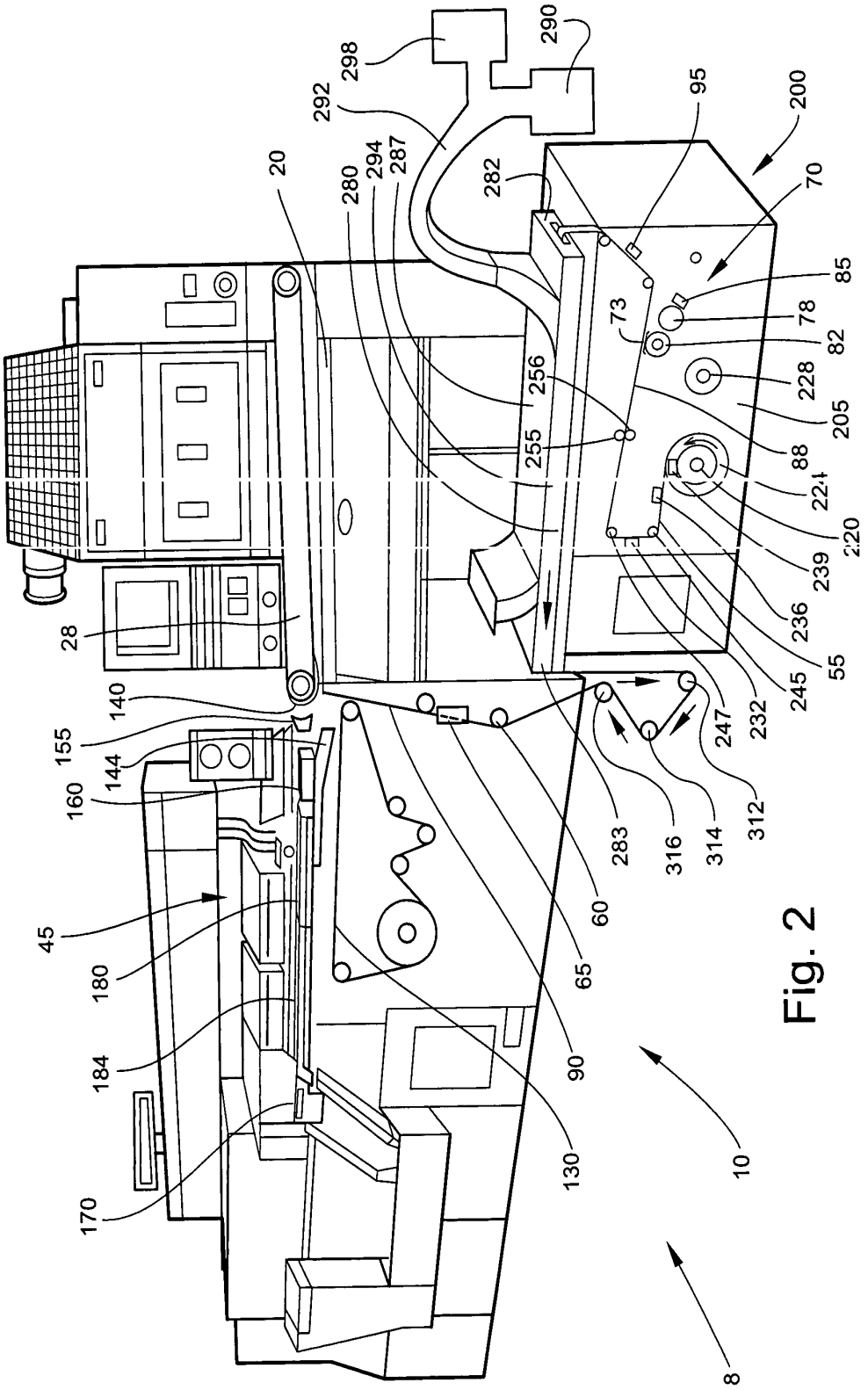

Fig. 2

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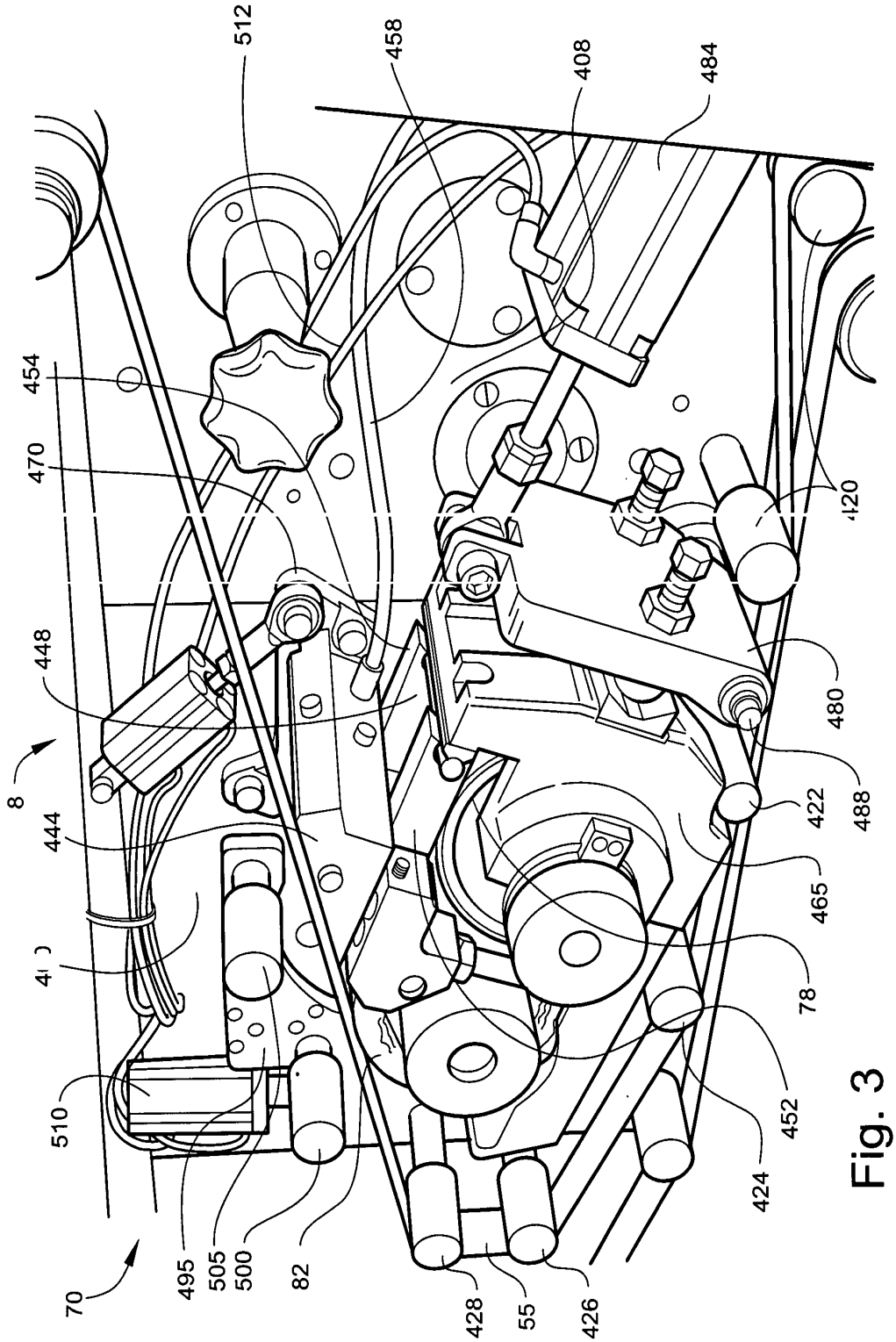

Fig. 3

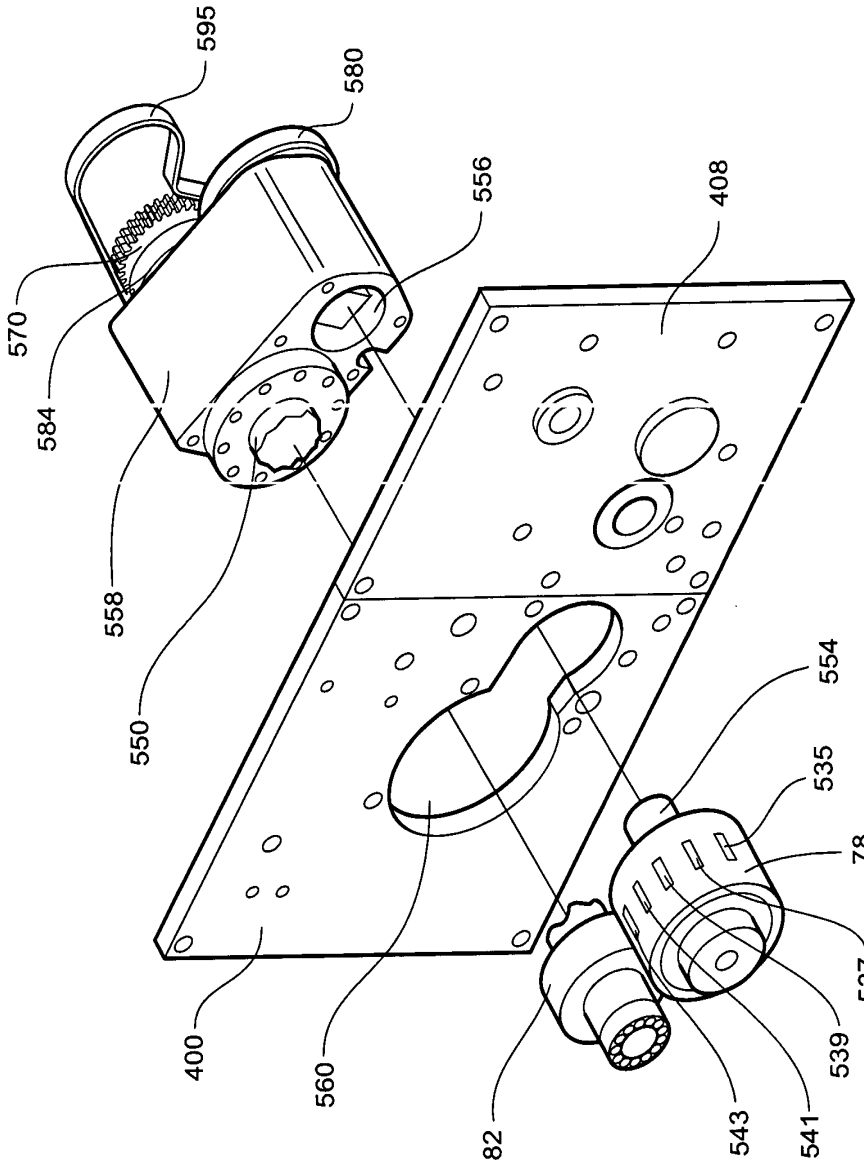
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Fig. 4

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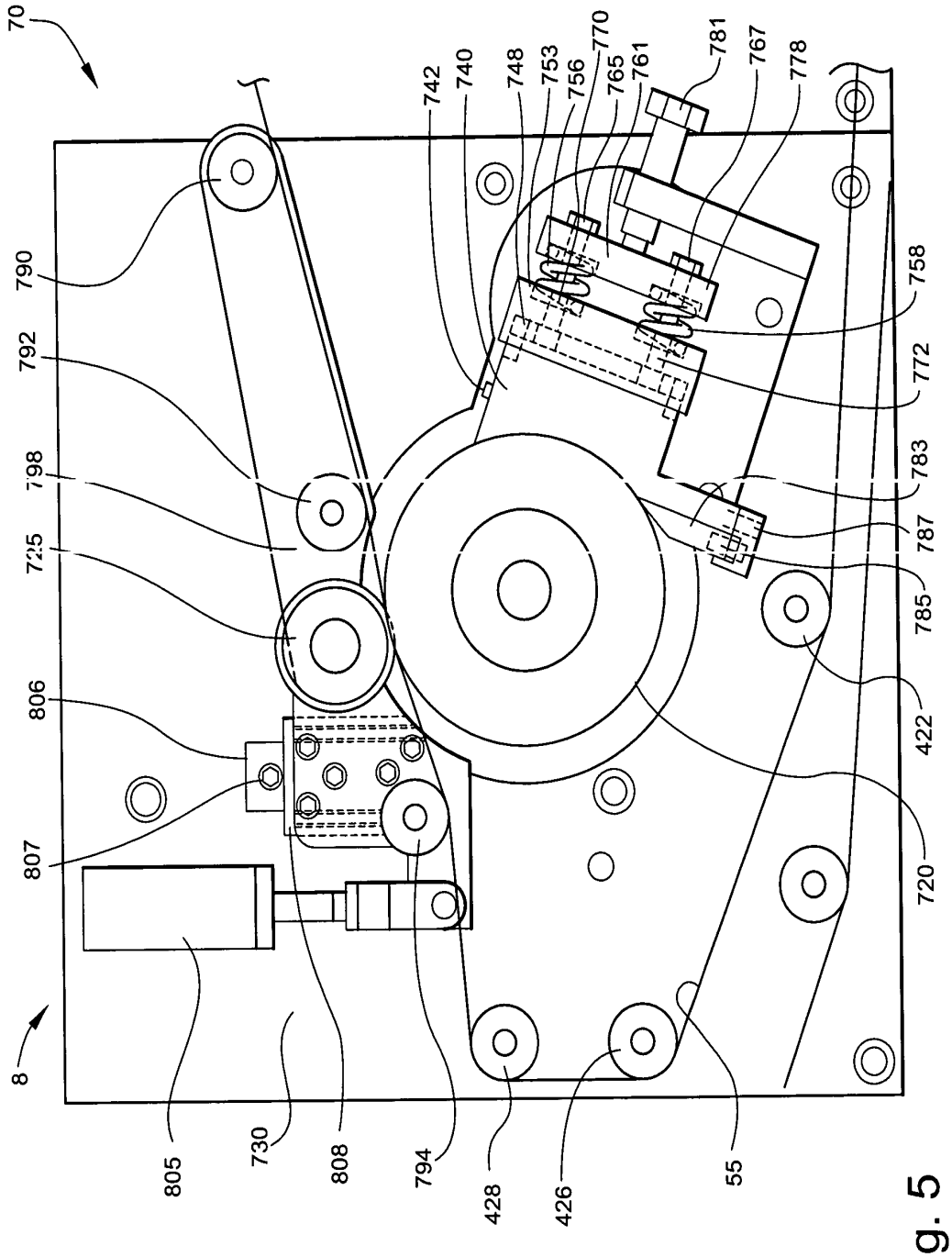

Fig. 5

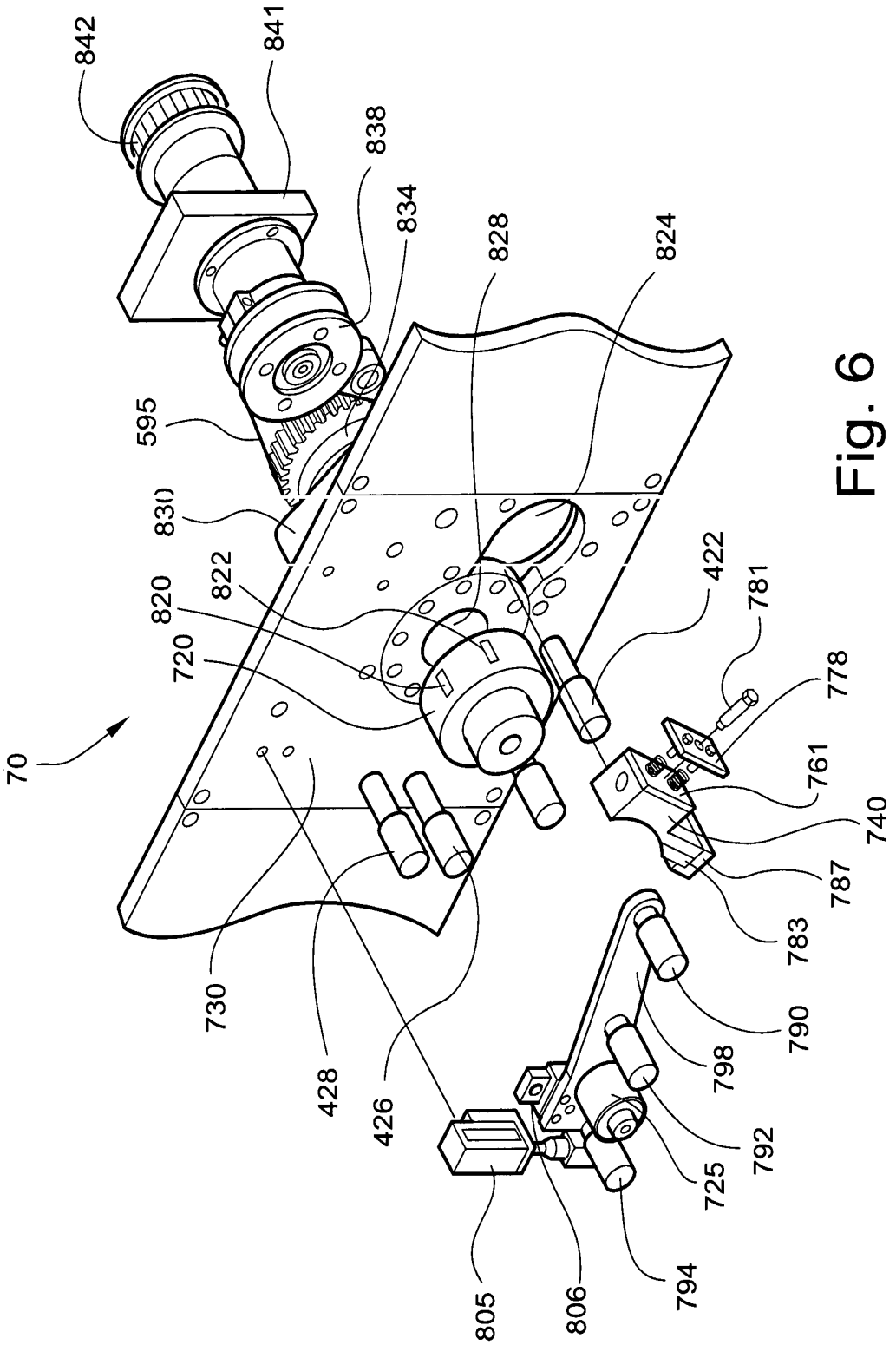
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Fig. 6

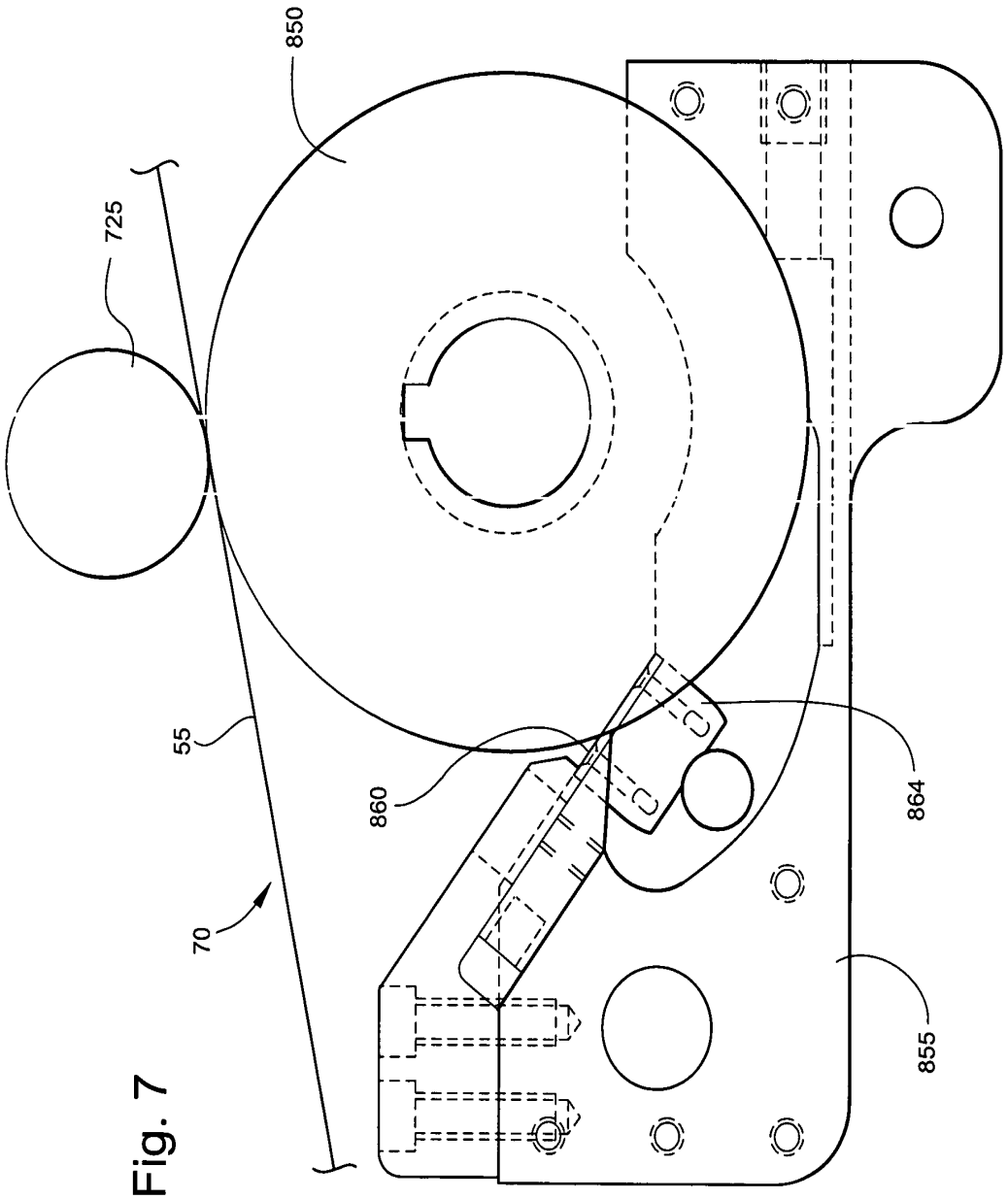


Fig. 7

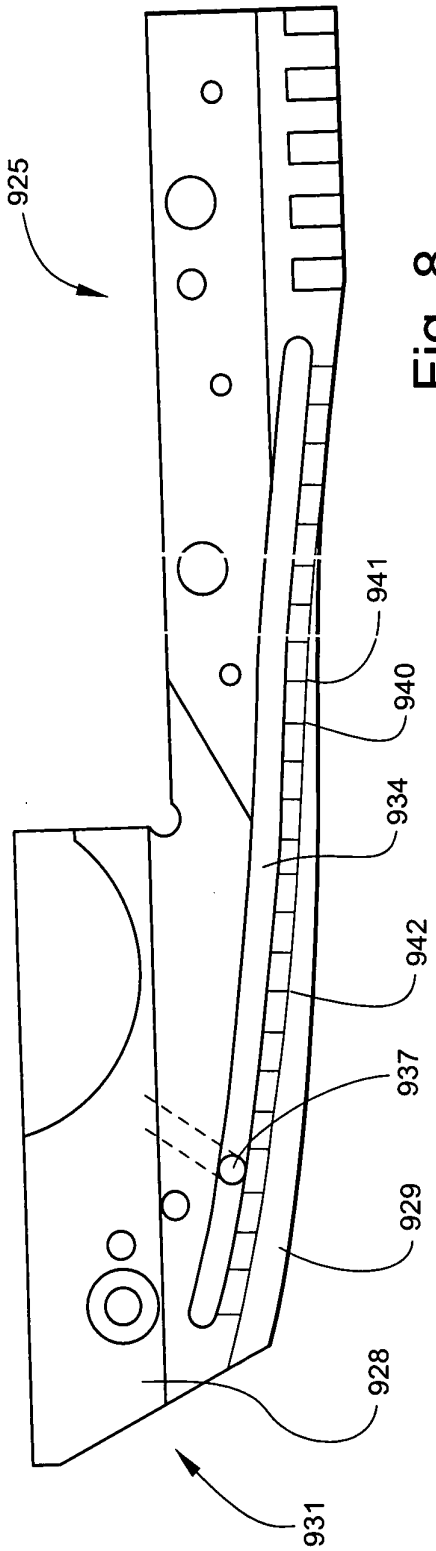


Fig. 8

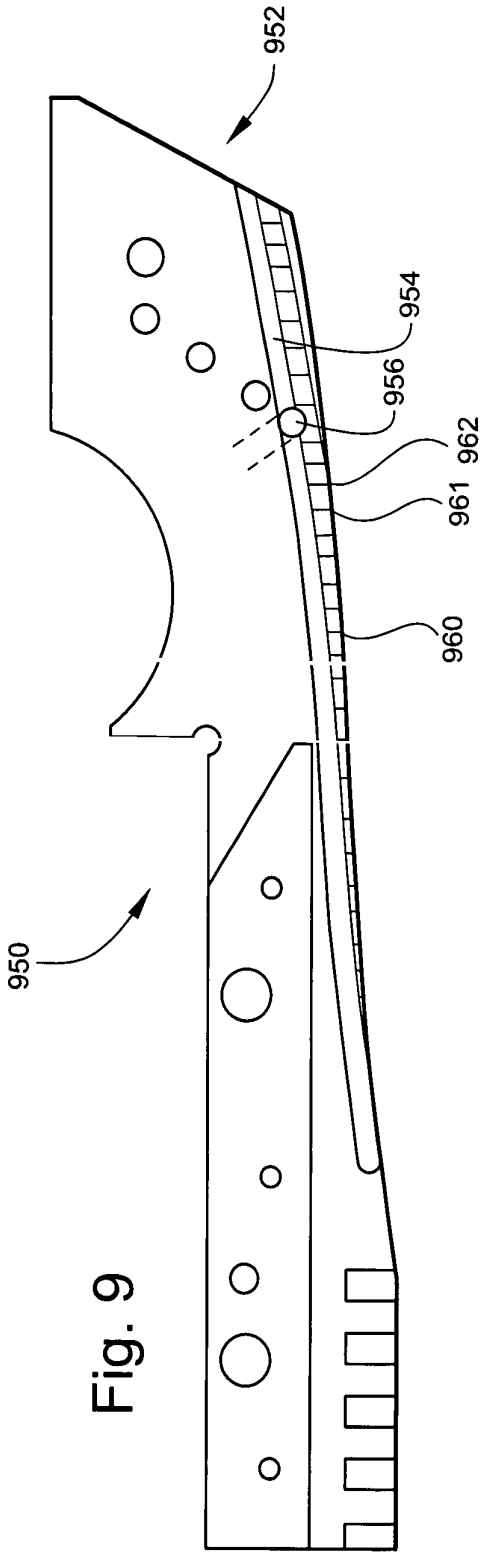


Fig. 9

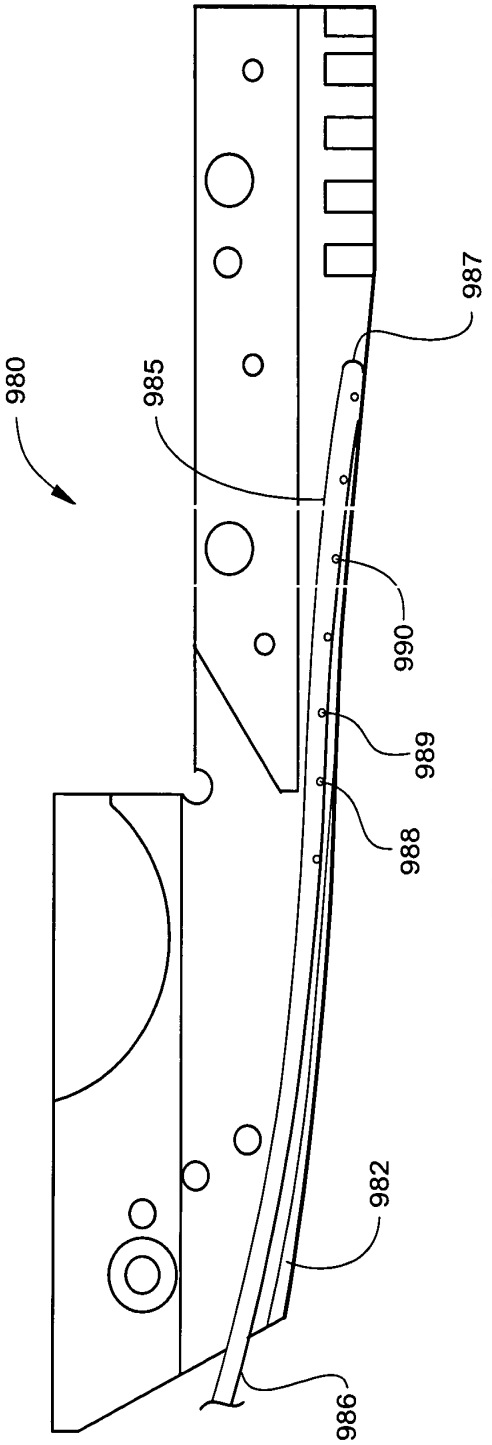
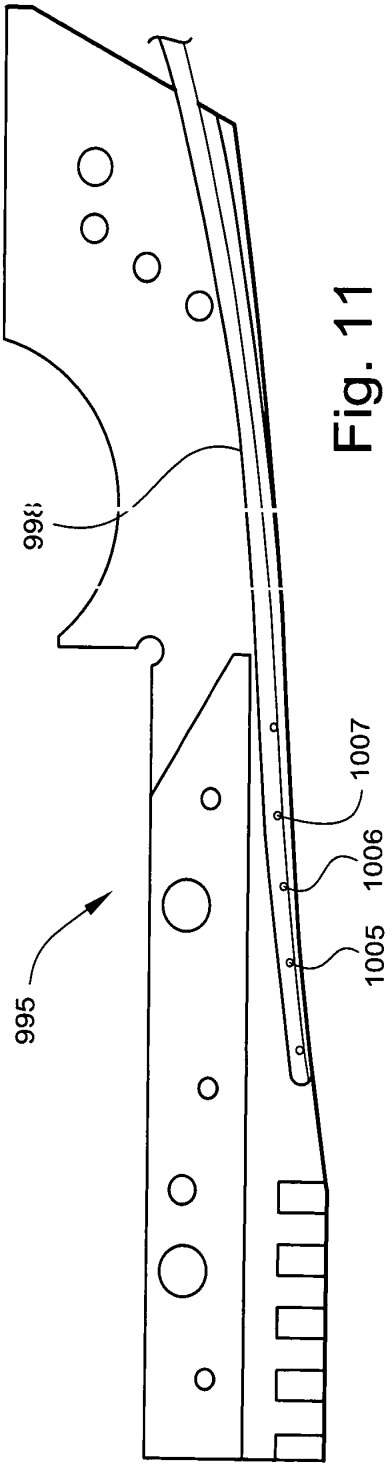


Fig. 10



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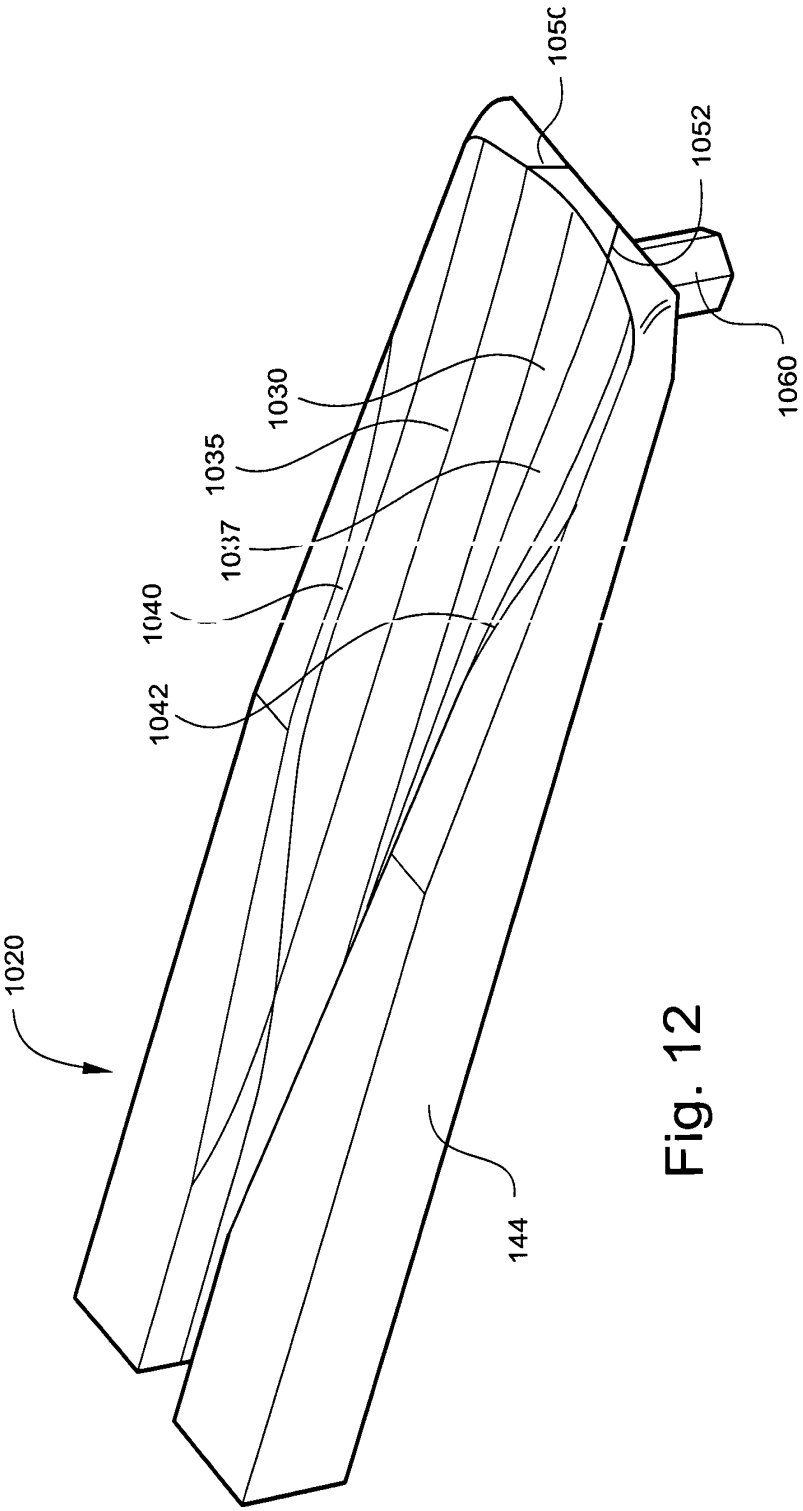


Fig. 12

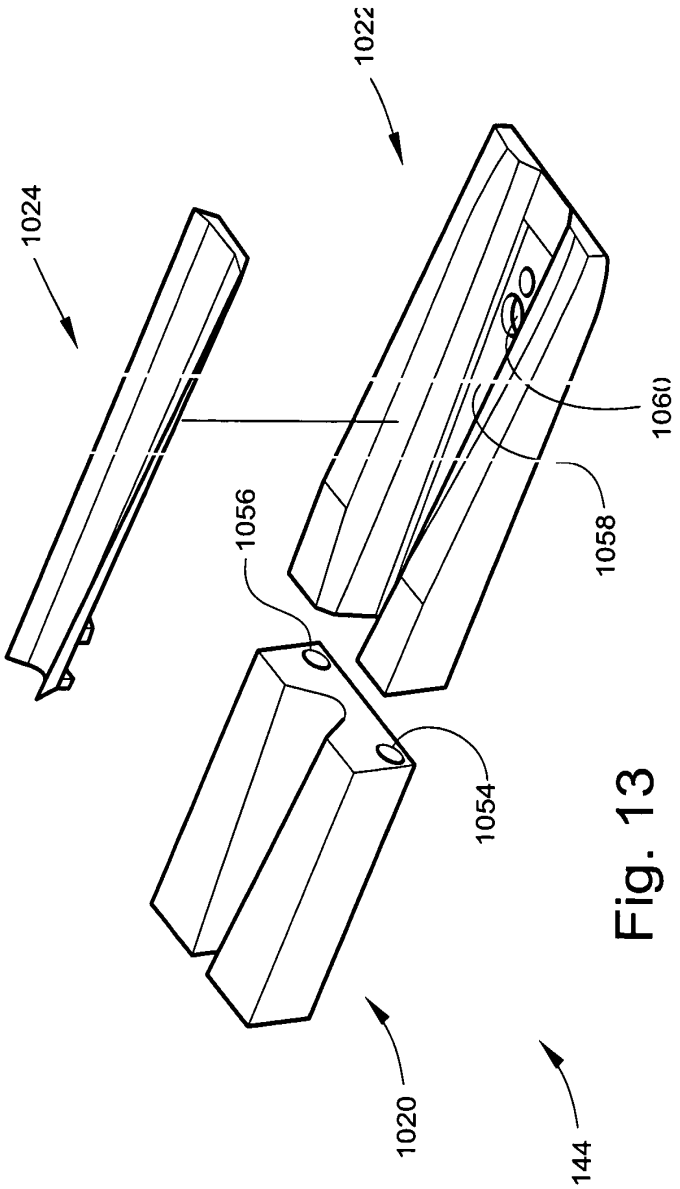
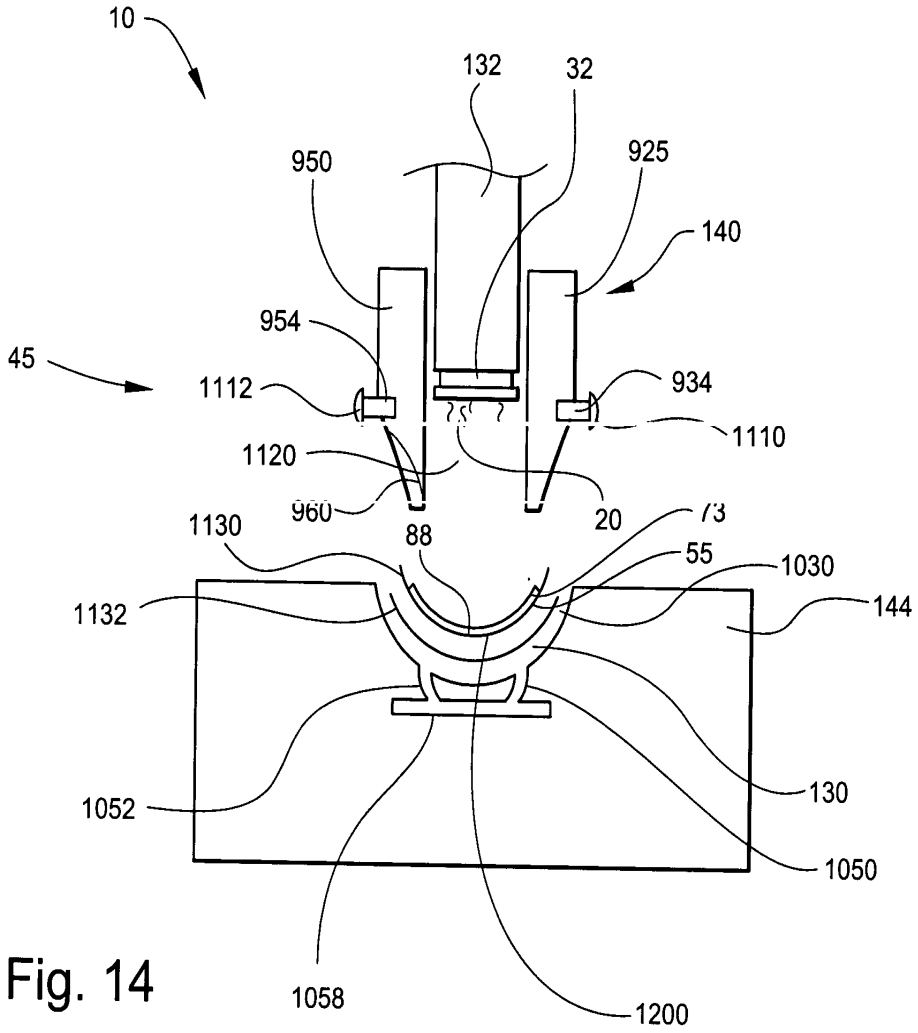


Fig. 13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1058
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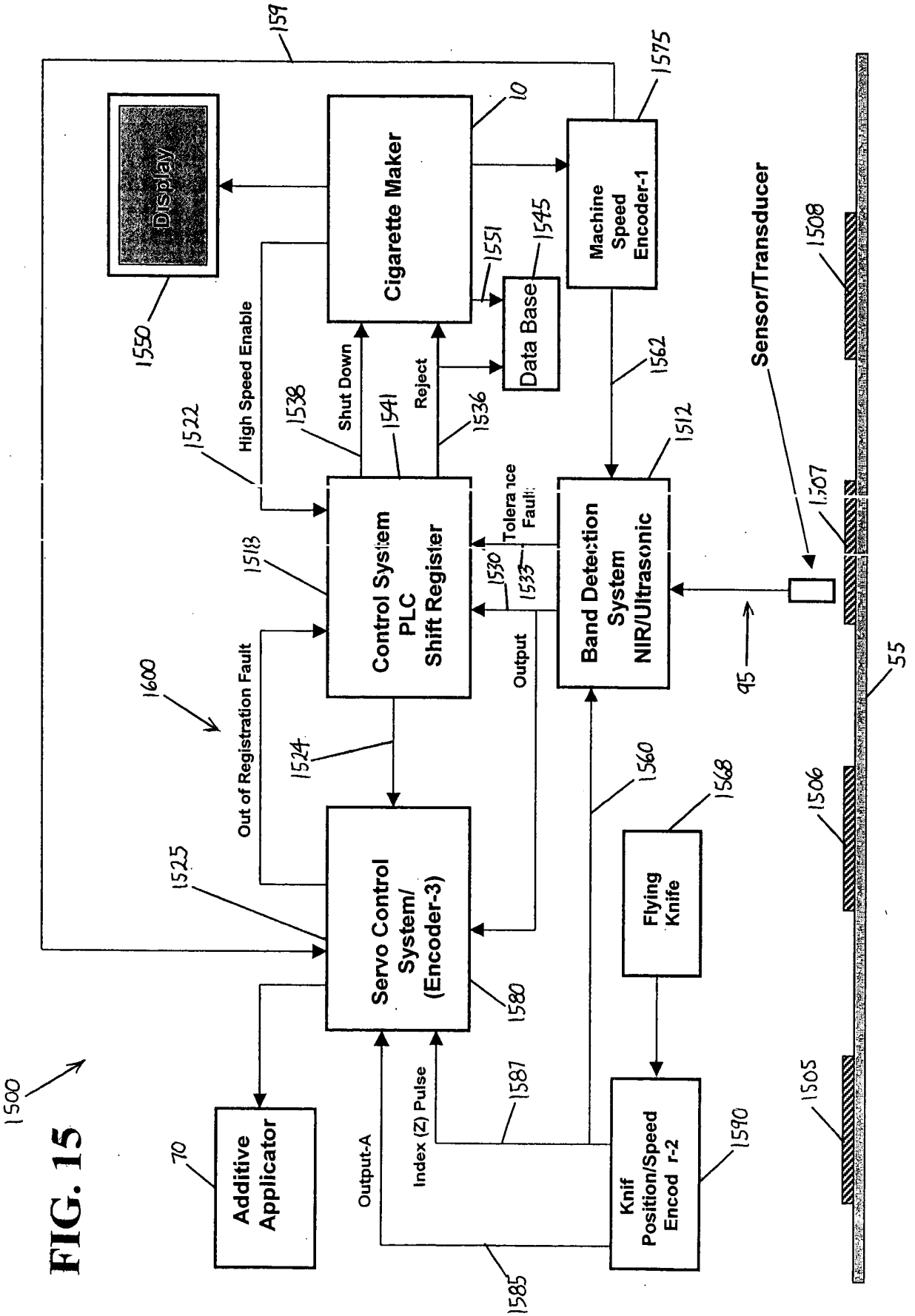
Fig. 14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159
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10
Display
Cigarette Maker
Machine Speed Encoder-1
1550
1551
1545
Data Base
1562
1508
Sensor/Transducer
High Speed Enable
1522
1538
Shut Down
1541
Reject
1536
1512
1507
Tolera nce Fault
1518
1530
1533
Control System PLC Shift Register
Band Detection System NIR/Ultrasonic
95
55
1600
Output
Out of Registration Fault
1524
1560
1568
1506
1525
Servo Control System/ (Encoder-3)
Flying Knife
1580
70
Additive Applicator
Output-A
Index (Z) Pulse
1587
Knif Position/Speed Encod r-2
1590
1505
1585

FIG. 15

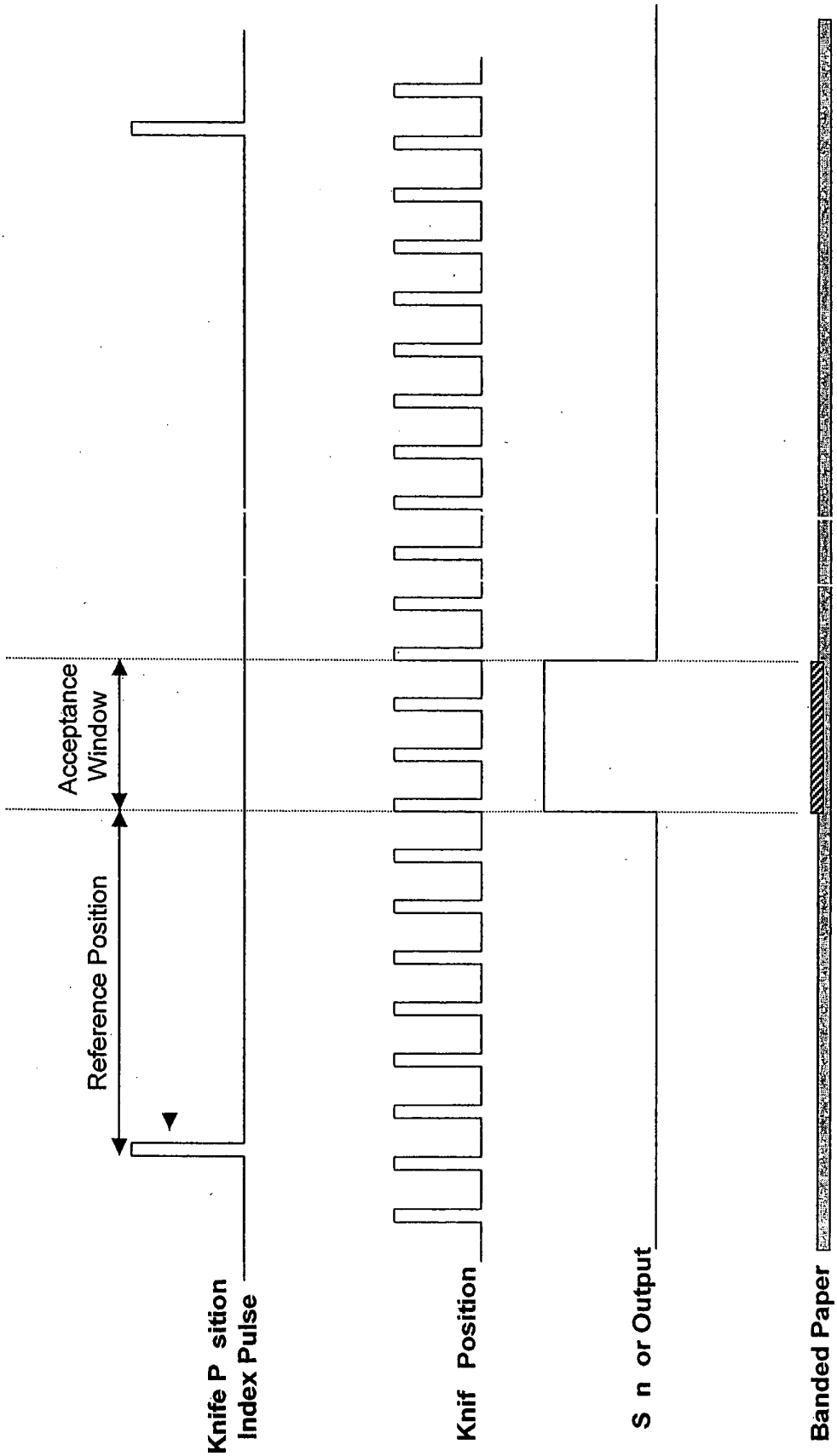
Acceptance Window
Reference Position
Knife P sition Index Pulse
Knif Position
S n or Output
Banded Paper

FIG. 16

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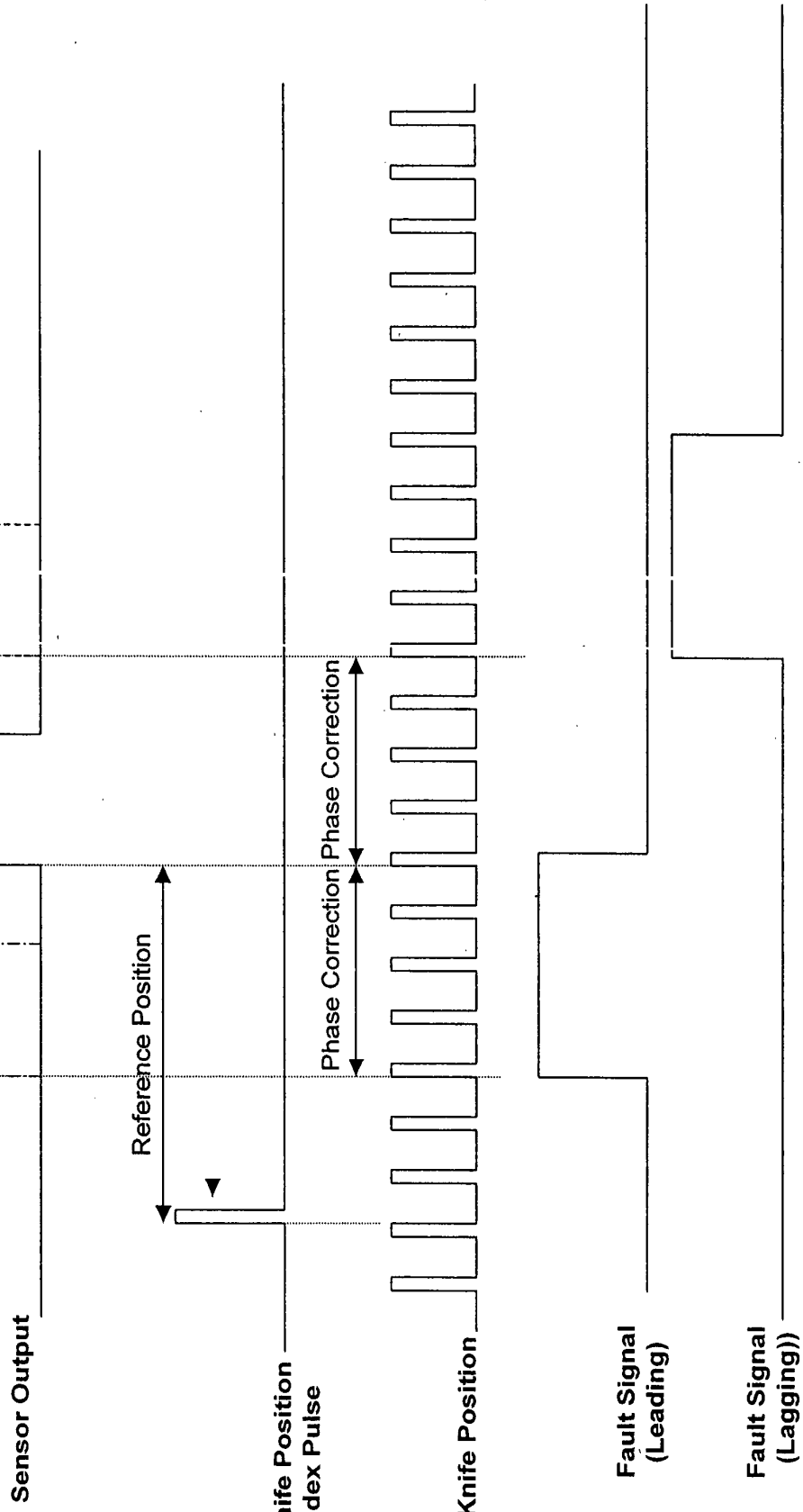
FIG. 17



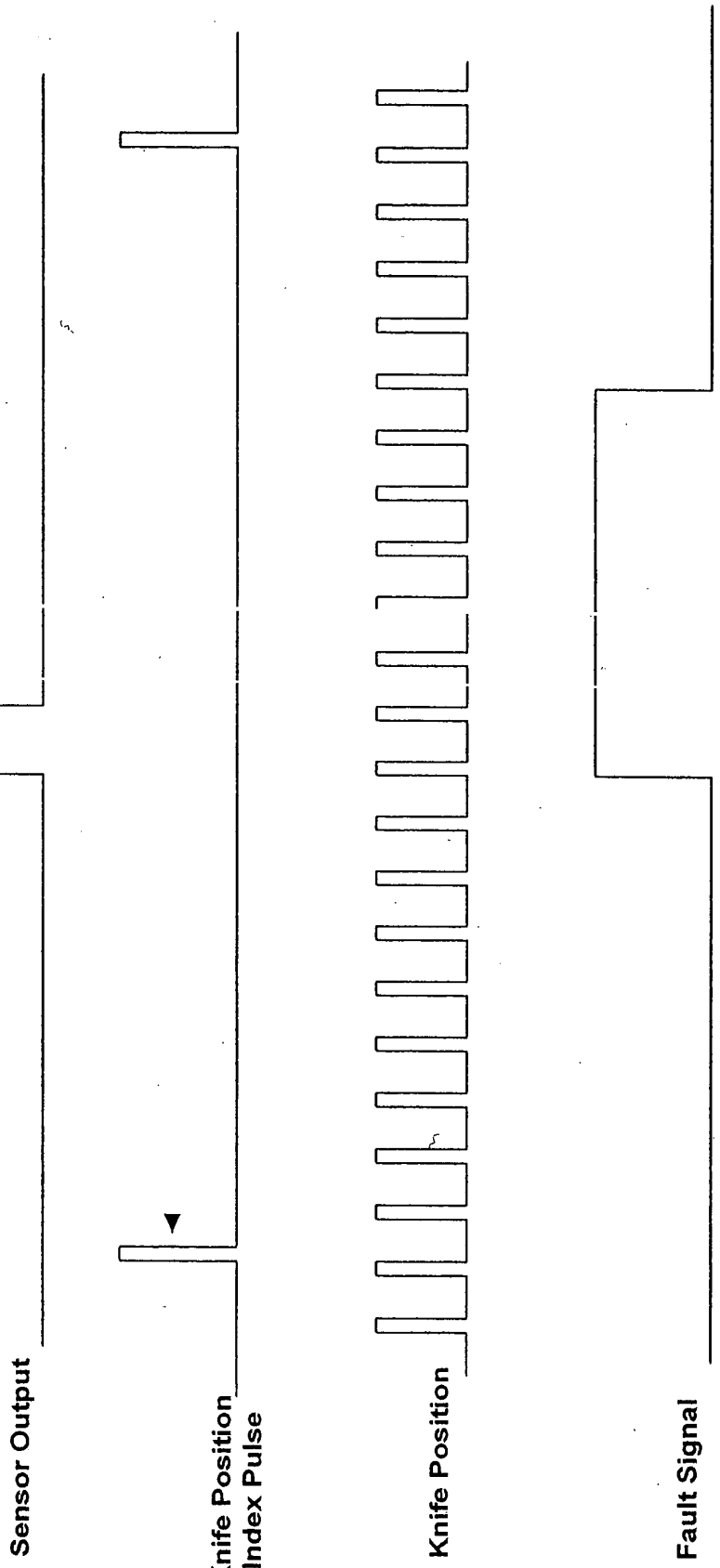

Narrow Band
Sensor Output
Knife Position Index Pulse
Knife Position
Fault Signal

FIG. 18

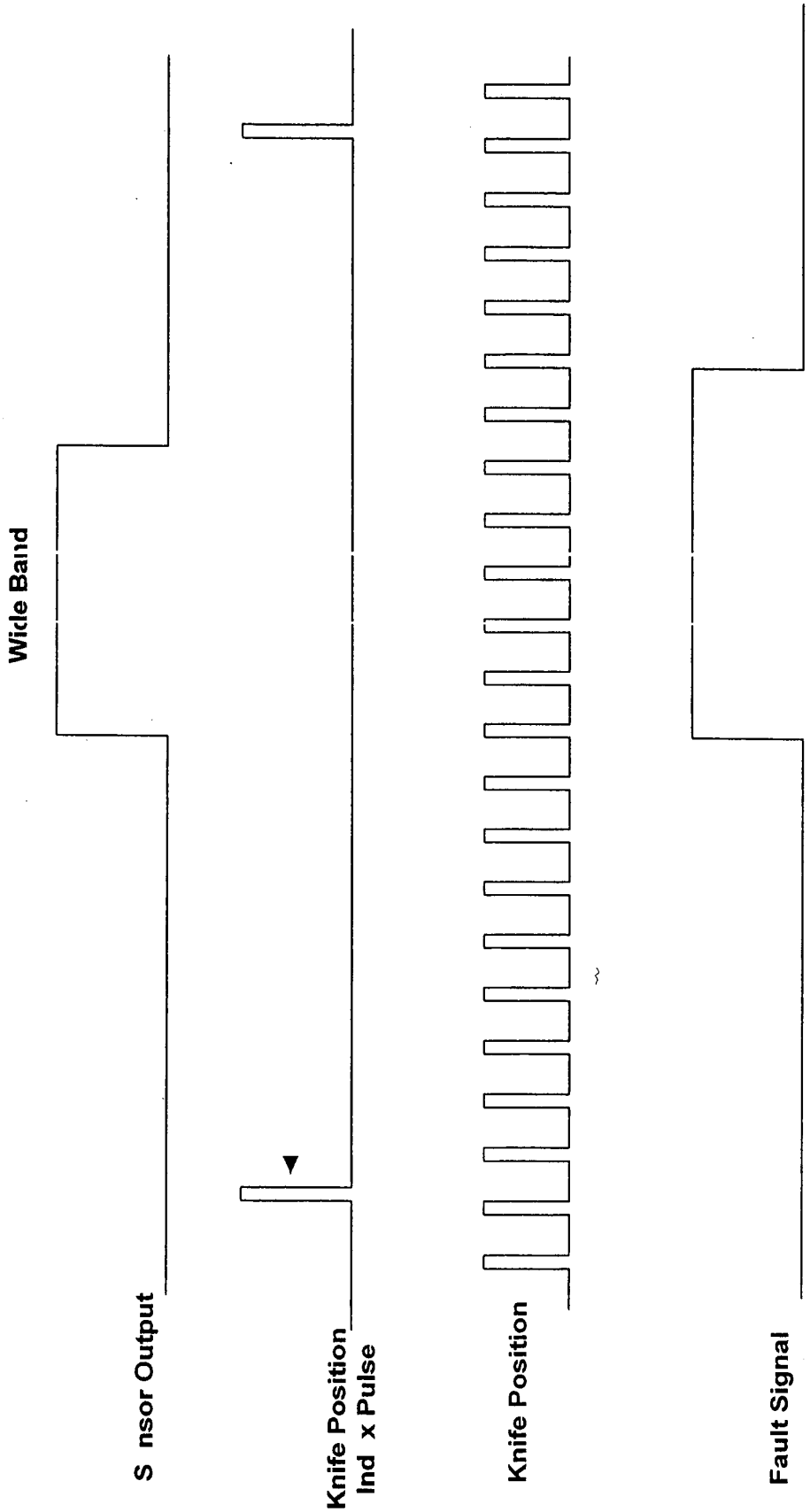

Wide Band
S nsor Output
Knife Position
Ind x Pulse
Knife Position
Fault Signal

FIG. 19

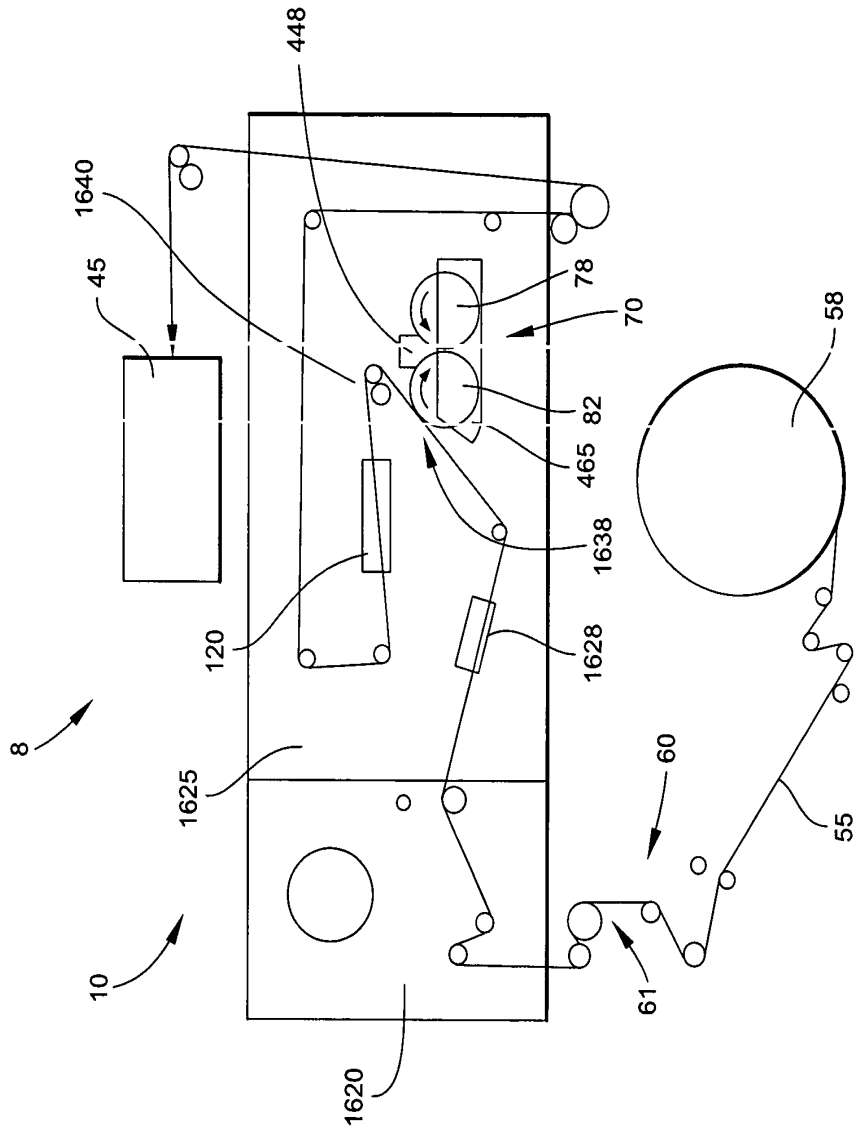


Fig. 20

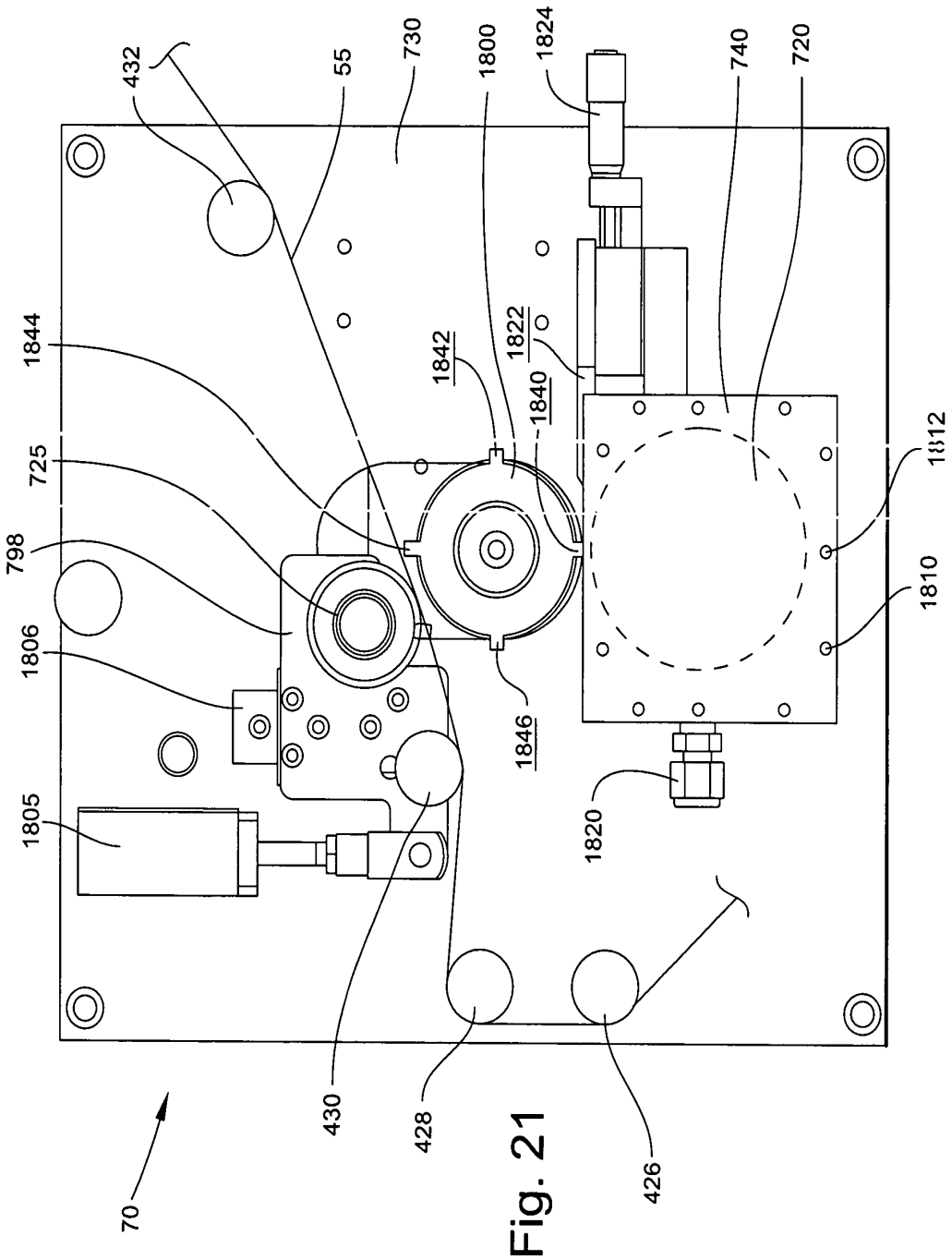

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Fig. 21

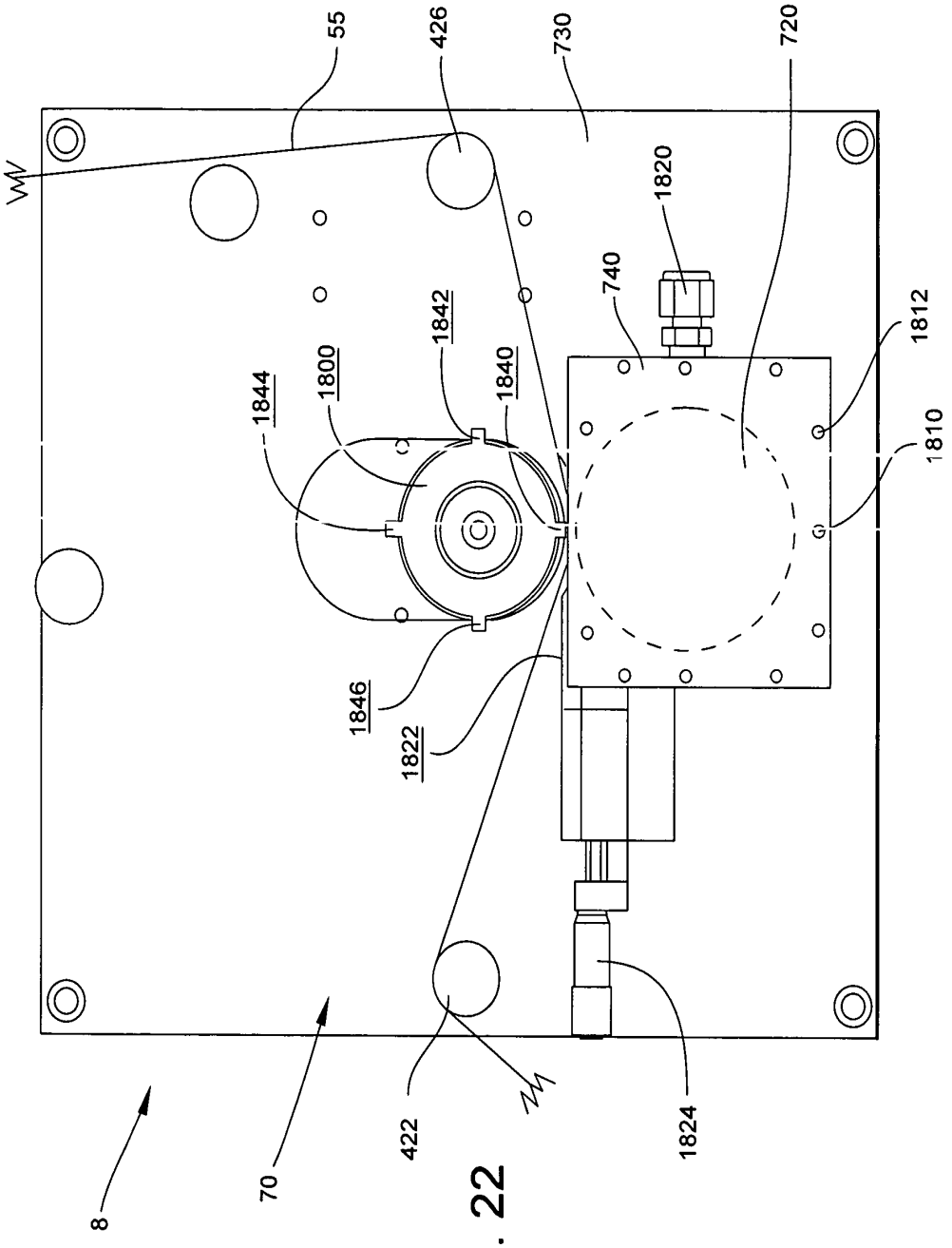
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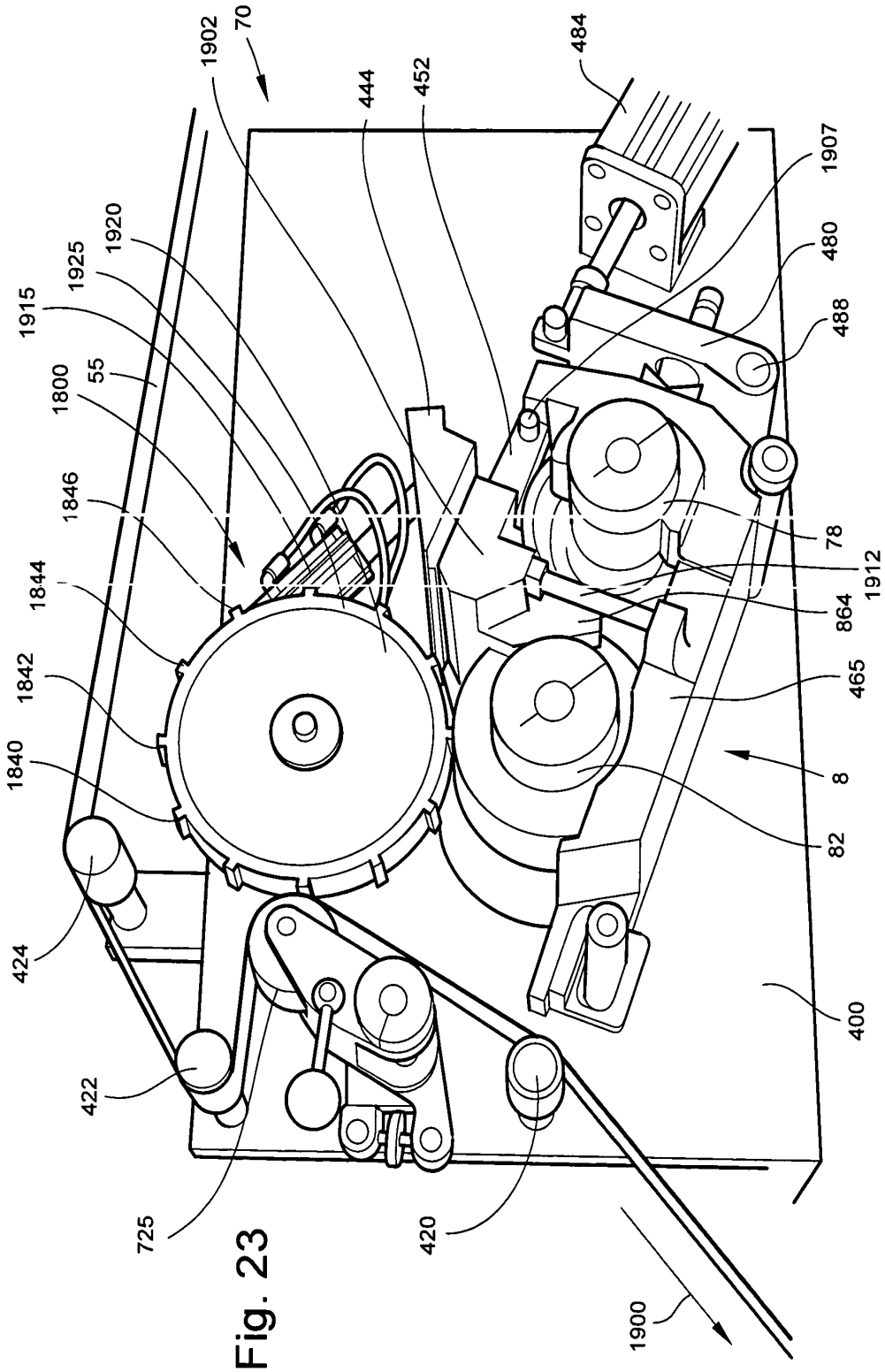
Fig. 22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725
420
1900

Fig. 23

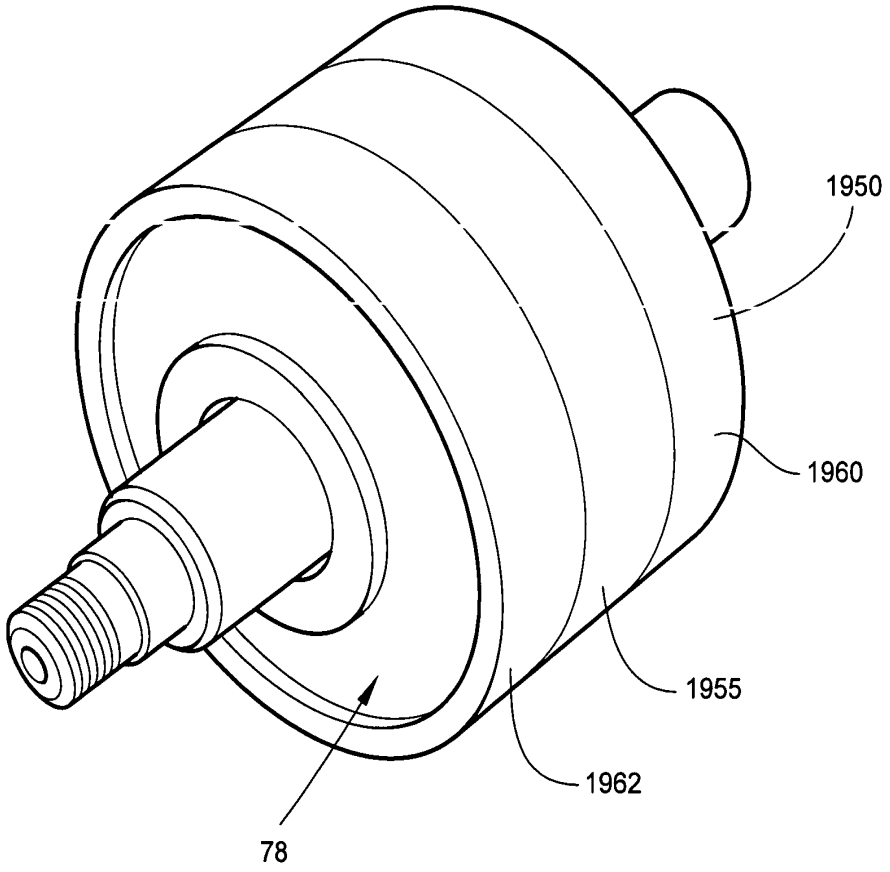

Fig. 24

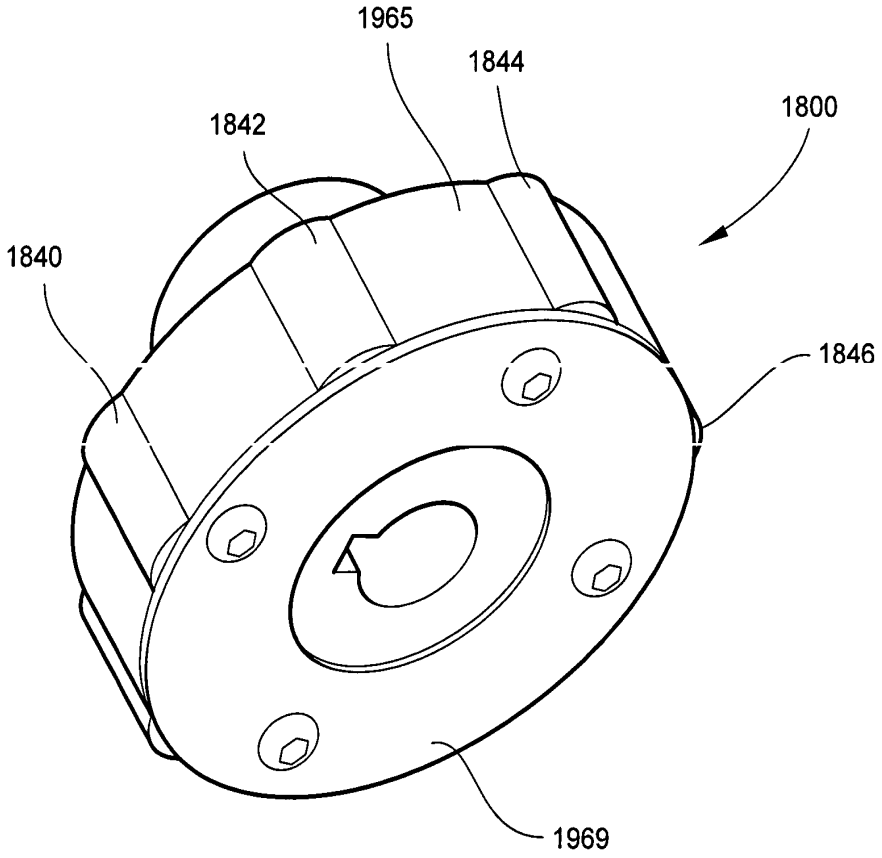

Fig. 25

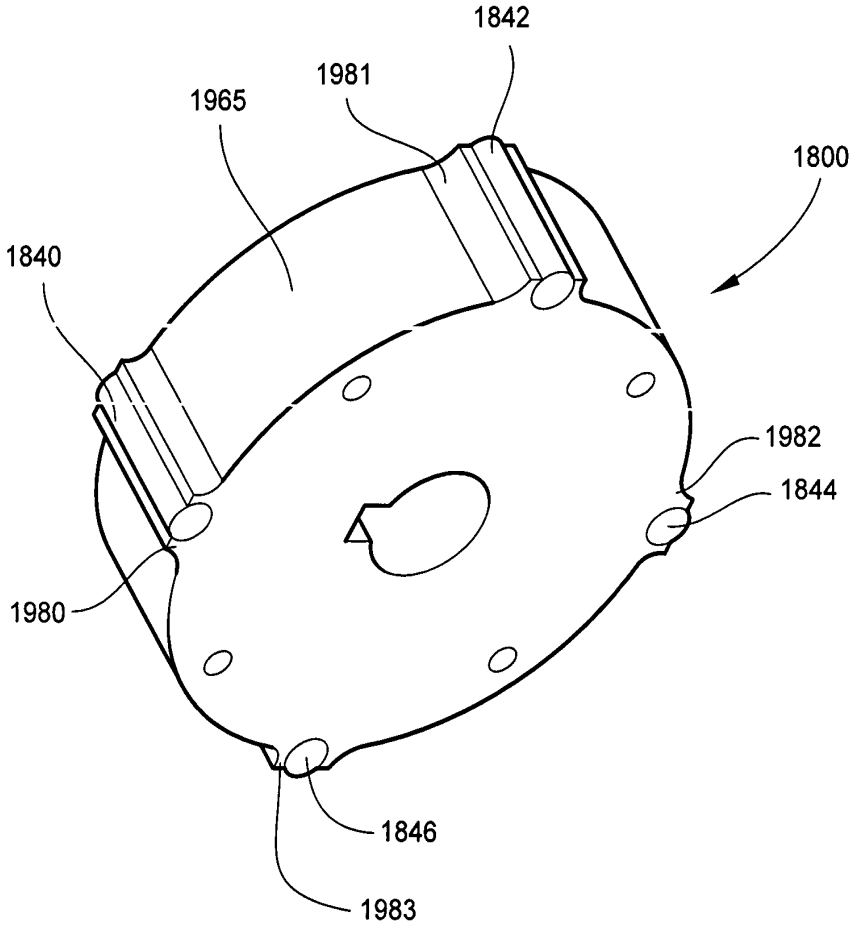

Fig. 26

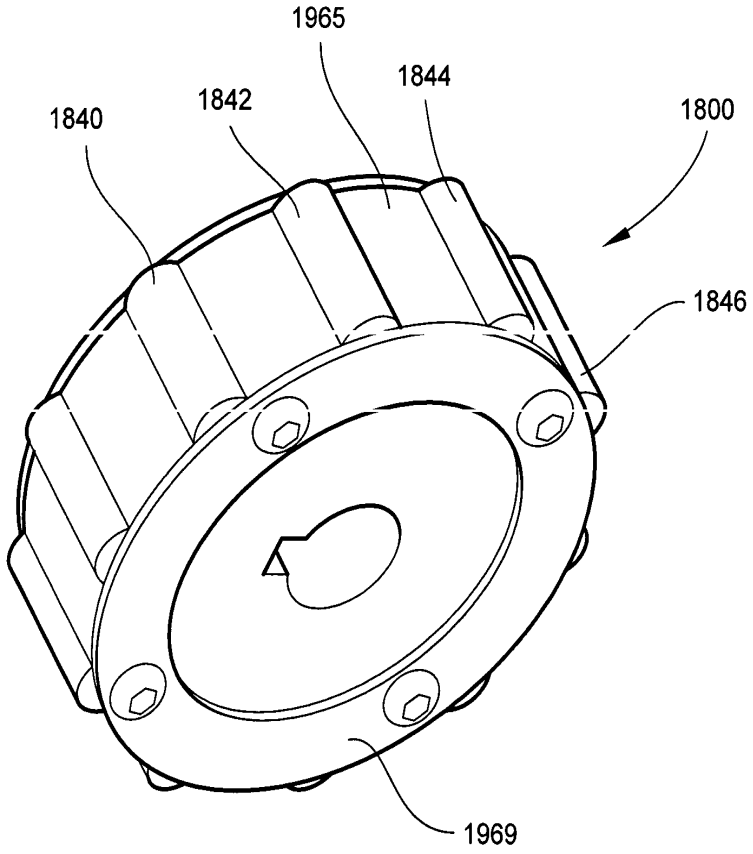

Fig. 27

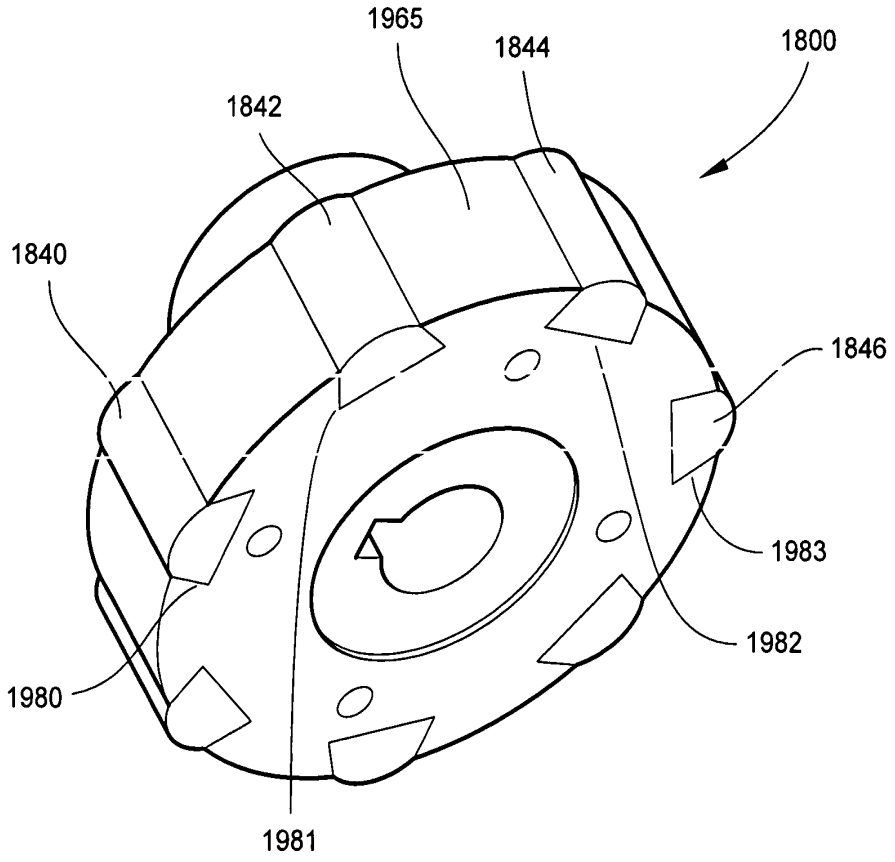

Fig. 28

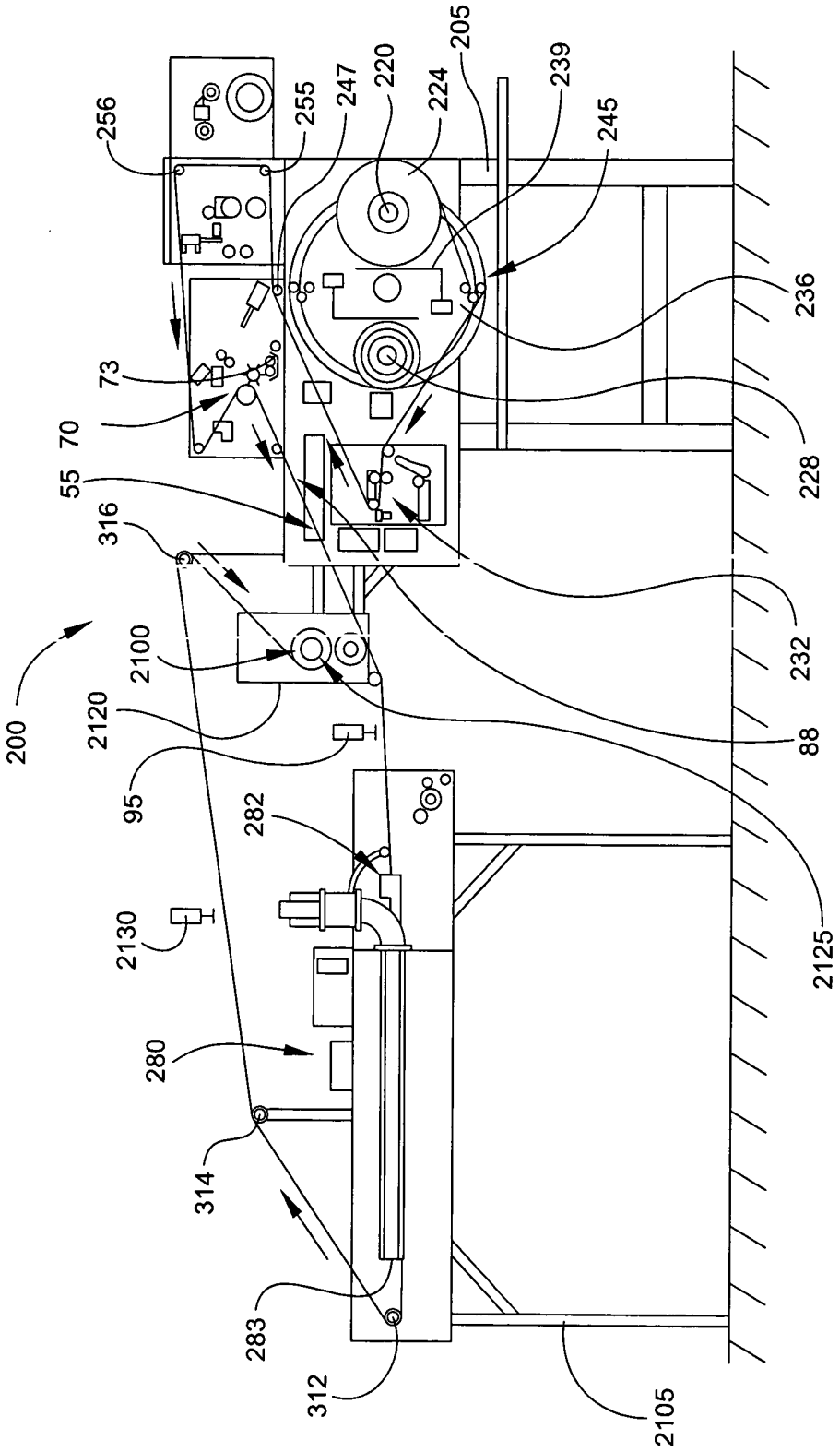
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Fig. 29

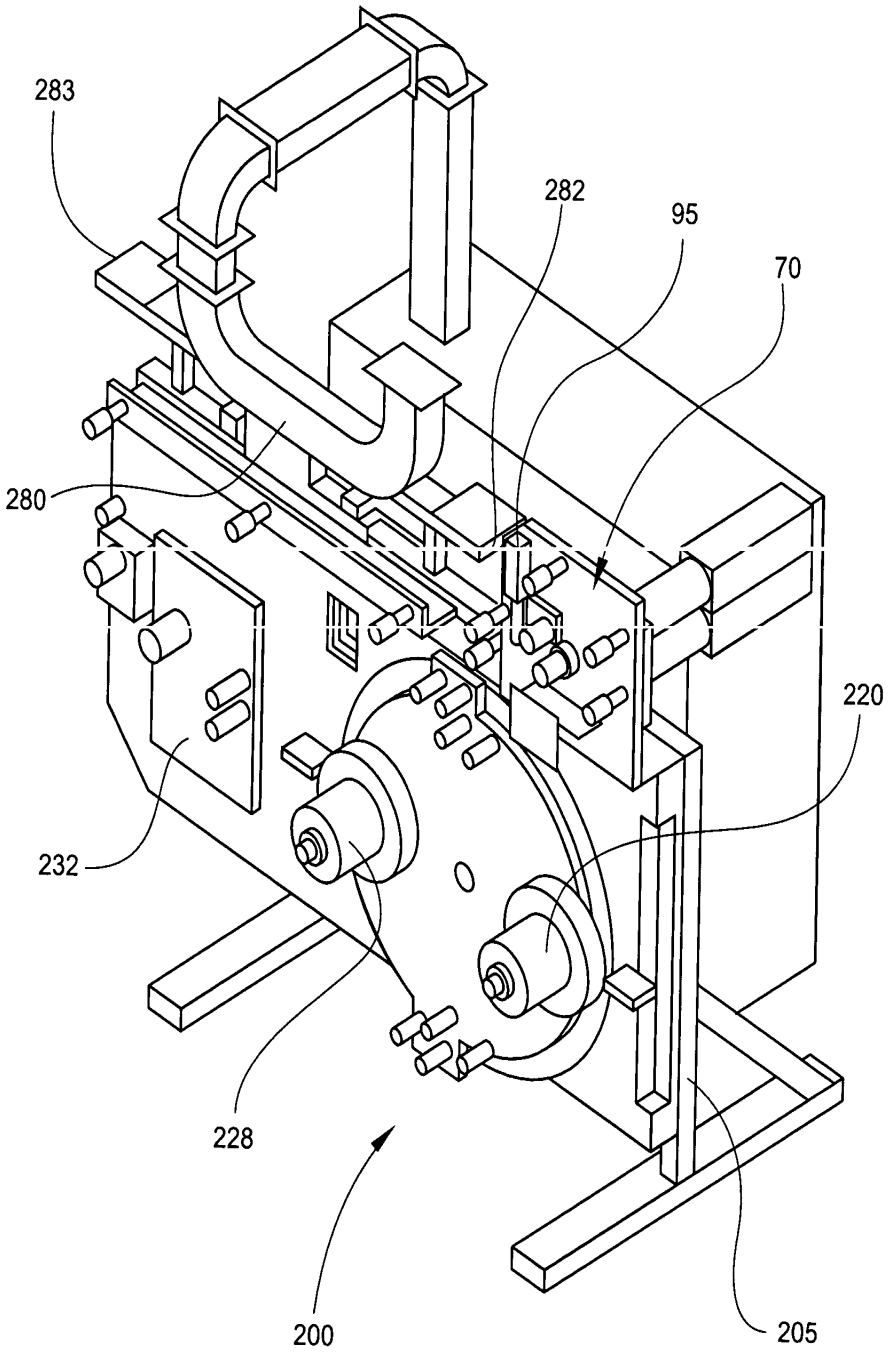

Fig. 30